

**Table B-4a: Species Characteristics, Calibrated Values – Phytoplankton and Invertebrates**

<b>Model Component</b>	<b>Phytoplankton</b>	<b>Zooplankton</b>	<b>Amphipod, Insect Larvae, Oligochaete (benthic consumers)</b>	<b>Clam (filter feeder)</b>	<b>Crayfish (epibenthic consumer)</b>
Lipid Content (fraction)	0.123	1.1	0.022	0.022	0.076
Distribution	Triangle 8E-4,1.2E-3,2E-3	Triangle 0.009,0.01,0.011	Triangle 0.008,0.015,0.042	Normal $\mu=0.022$ $\sigma=0.0011$	Normal $\mu=0.0078$ $\sigma=0.00045$
Water Content (fraction)	0.95	0.82	0.8	0.05	0.74
Distribution	Triangle 0.935, 0.955,0.993	Triangle 0.8,0.9,0.98	Triangle 0.72,0.8,0.88	Uniform 0.01,0.1	Normal $\mu=0.74$ $\sigma=0.0031$
Fraction of Porewater Ventilated	0	0	0.7	0.05	
Distribution	None	None	Uniform 0.01,0.1	Uniform 0.01,0.1	
Growth Rate Constant (1/day)	0.09				
Distribution	Triangle (0.03,0.08,0.13)				
Weight (kg)		1.7E-7	4.8E-6	1.3E-3	0.044
Distribution		Triangle 3E-9,1.4E-7,2.3E-7	Triangle 1.4E-6,5.3E-6,6.03E-6	Normal $\mu=1.25E-3$ $\sigma=1.3E-5$	Normal $\mu=0.044$ $\sigma=0.0007$
Absorption Fraction (lipid)		0.72	0.75	0.75	0.75
Distribution	None	None	None	None	None
Absorption Fraction (NLOM)		0.72	0.75	0.75	0.75
Distribution	None	None	None	None	None
Absorption Fraction of Water		0.25	0.25	0.25	0.25
Distribution	None	None	None	None	None

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<b>Model Component</b>	<b>Phytoplankton</b>	<b>Zooplankton</b>	<b>Amphipod, Insect Larvae, Oligochaete (benthic consumers)</b>	<b>Clam (filter feeder)</b>	<b>Crayfish (epibenthic consumer)</b>
Scavenging Efficiency				1	
Distribution				None	

**Table B-4b: Species Characteristics, Calibrated Values – Vertebrates**

<b>Model Component</b>	<b>Sculpin</b>	<b>Largescale Sucker</b>	<b>Common Carp</b>	<b>Smallmouth Bass</b>	<b>Northern Pikeminnow</b>
Lipid Content (fraction)	0.042	0.073	0.094	0.051	0.063
Distribution	Normal $\mu=0.041$ $\sigma=0.0016$	Normal $\mu=0.076$ $\sigma=0.0052$	Normal $\mu=0.088$ $\sigma=0.0053$	Normal $\mu=0.054$ $\sigma=0.0021$	Normal $\mu=0.053$ $\sigma=0.008$
Water Content (fraction)	0.95		0.68	0.71	0.71
Distribution	Normal $\mu=0.75$ $\sigma=0.0023$	Normal $\mu=0.71$ $\sigma=0.0054$	Normal $\mu=0.69$ $\sigma=0.0047$	Normal $\mu=71$ $\sigma=0.0033$	Normal $\mu=0.72$ $\sigma=0.0088$
Fraction of Porewater Ventilated	0.04	0	0	0	0
Distribution	Uniform 0.01,0.1	None	None	None	None
Weight (kg)	0.02	0.80	2.5	0.35	0.6
Distribution	Normal $\mu=0.02$ $\sigma=0.00039$	Normal $\mu=0.794$ $\sigma=0.0.012$	Normal $\mu=2.48$ $\sigma=0.066$	Normal $\mu=0.088$ $\sigma=0.0053$	Normal $\mu=0.56$ $\sigma=0.048$
Absorption Fraction (lipid)	0.92	0.92	0.92	0.92	0.92
Distribution	None	None	None	None	None
Absorption Fraction (NLOM)	0.6	0.6	0.6	0.6	0.6
Distribution	None	None	None	None	None
Absorption Fraction of Water	0.25	0.25	0.25	0.25	0.25
Distribution	None	None	None	None	None

**Table B-4c: Species Characteristics, Calibrated Values – Dietary**

<b>Model Component</b>	<b>Dietary Items</b>	<b>Initial Distribution (%)<sup>a</sup></b>	<b>Calibrated Value (%)</b>
Zooplankton	Phytoplankton/algae	100	100
Benthic invertebrate filter feeders (clams)	Sediment solids	70 (50 – 80)	78
	Phytoplankton/algae	30 (20 – 50)	22
Benthic invertebrate consumers	Sediment solids	95 (85 – 100)	91
	Phytoplankton/algae	5 (0 – 15)	9
Epibenthic invertebrate consumers (crayfish)	Sediment solids	2 (0 – 4)	2
	Phytoplankton/algae	10 (0 – 20)	11
	Zooplankton	10 (0 – 20)	18
	Benthic invertebrates (filter feeders)	18 (0 – 35)	22
	Benthic invertebrates (consumers)	60 (25 – 75)	47
Sculpin	Sediment solids	0 (0 – 5)	3
	Zooplankton	0 (0 – 5)	3
	Benthic invertebrates (filter feeders)	15 (0 – 50)	32
	Benthic invertebrates (consumers)	80 (25 – 90)	53
	Epibenthic invertebrates (consumers)	5 (0 – 10)	9
Largescale sucker	Sediment solids	5 (1 – 15)	15
	Phytoplankton/algae	25 (0 – 60)	15
	Zooplankton	15 (5 – 25)	20
	Benthic invertebrates (filter feeders)	10 (5 – 15)	7
	Benthic invertebrates (consumers)	25 (15 – 35)	27
	Epibenthic invertebrates (consumers)	20 (0 – 40)	16
Common carp	Sediment solids	5 (0 – 10)	4
	Phytoplankton/algae	45 (30 – 60)	33
	Benthic invertebrates (filter feeders)	10 (5 – 15)	14
	Benthic invertebrates (consumers)	40 (25 – 55)	48
Smallmouth Bass	Sediment solids	0	0
	Benthic invertebrates (consumers)	5 (0 – 30)	24
	Epibenthic invertebrates (consumers)	5 (0 – 30)	17
	Sculpin	90 (50 – 100)	59

**Table B-4c: Species Characteristics, Calibrated Values – Dietary**

<b>Model Component</b>	<b>Dietary Items</b>	<b>Initial Distribution (%)<sup>a</sup></b>	<b>Calibrated Value (%)</b>
Northern Pikeminnow	Sediment solids	0	0
	Phytoplankton/algae	4 (0 – 10)	8
	Benthic invertebrates (filter feeders)	5 (0 – 10)	6
	Benthic invertebrates (consumers)	26 (15 – 45)	35
	Epibenthic invertebrates (consumers)	40 (25 – 65)	30
	Sculpin	25 (0 – 60)	21

**Table B-4d: Calibrated Chemical-Specific K<sub>ow</sub> and Water Concentrations**

Chemical	K <sub>ow</sub>		Water Concentration (ng/L)	
	Initial Distribution <sup>a</sup>	Calibrated Value	Initial Distribution <sup>b</sup>	Calibrated Value
<b>PCBs</b>				
Total PCBs <sup>a</sup>	6.09 – 7.84	6.14	0.217 (SD = 0.0244)	0.228
PCB 77	5.62 – 7.87	6.02	0.000261 (SD = 3.90 x 10 <sup>-5</sup> )	0.000260
PCB 126	6.38 – 7.00	6.38	1.32 x 10 <sup>-5</sup> (SD = 1.04 x 10 <sup>-6</sup> )	1.25 x 10 <sup>-5</sup>
<b>Dioxins and Furans</b>				
2,3,4,7,8-PeCDF	6.56 – 7.82	6.58	5.19 x 10 <sup>-6</sup> (SD = 5.97 x 10 <sup>-7</sup> )	6.37 x 10 <sup>-6</sup>
<b>Pesticides</b>				
4,4'-DDD	4.82 – 6.33	5.83	0.049 (SD = 0.0090)	0.053
4,4'-DDE	4.28 – 6.97	6.42	0.031 (SD = 0.0028)	0.031
4,4'-DDT	3.98 – 8.31	6.31	0.017 (SD = 0.0021)	0.015
Aldrin	3.01 – 7.50	4.11	0.0022 (SD = 0.00022)	0.0023
alpha-HCH	3.19 – 4.57	4.08	0.027 (SD = 0.0040)	0.017
beta-HCH	3.19 – 4.26	3.43	0.0052 (SD = 0.00042)	0.0053
Dieldrin	2.60 – 6.20	5.26	0.067 (SD = 0.0092)	0.076
gamma-HCH	3.19 – 4.26	3.69	0.025 (SD = 0.0013)	0.028
Heptachlor	3.87 – 6.10	4.04	0.00021 (SD = 0.000016)	0.00019
Heptachlor epoxide	3.65 – 5.42	4.74	0.0071 (SD = 0.00044)	0.0072
Sum DDD	4.80 – 6.31	5.73	0.070 (SD = 0.013)	0.094
Sum DDE	4.22 – 6.87	6.45	0.032 (SD = 0.0029)	0.038
Sum DDT	3.98 – 8.19	6.00	0.022 (SD = 0.0024)	0.0217
Total chlordane	2.78 – 6.42	5.63	0.029 (SD = 0.0019)	0.031
Total DDx	4.34 – 7.08	5.91	0.13 (SD = 0.017)	0.139

<sup>a</sup> Uniform distributions developed from literature K<sub>ow</sub> values were used to calibrate the model

<sup>b</sup> Normal distributions based on XAD water samples from the LWR were used to calibrate the model

**Table B-4e: Calibrated Chemical-Specific  $K_M$  (metabolic rate constant)**

Chemical	Fish $K_M$ (1/day) <sup>a</sup>			Invertebrate $K_M$ (1/day) <sup>b</sup>		
	Nominal Value	Initial Distribution <sup>c</sup>	Calibrated Value	Nominal Value	Initial Distribution <sup>c</sup>	Calibrated Value
<b>PCBs</b>						
PCB 77	0.03	0 – 0.3	0.0070	NA	NA	NA
PCB 126	0.003	0 – 0.03	0.0064	NA	NA	NA
<b>Dioxins and Furans</b>						
2,3,4,7,8-PeCDF	0.03	0 – 0.3	0.024	0.03	0 – 0.3	0.095
<b>Pesticides</b>						
4,4'-DDT	0.01	0 – 0.1	0.010	0.01	0 – 0.1	0.058
Sum DDT	0.005	0 – 0.05	0.0078	NA	NA	NA

<sup>a</sup> Fish metabolic rates were used for all modeled fish species (sculpin, largescale sucker, common carp, smallmouth bass, and northern pikeminnow).

<sup>b</sup> Invertebrate metabolic rates were used for all invertebrate species for 2,3,4,7,8-PeCDF (benthic invertebrate filter feeders, benthic invertebrate consumers, and EICs). For 4,4'-DDT, the metabolic rate was applied only to epibenthic invertebrate consumers (crayfish).

<sup>c</sup> Uniform distributions were used to calibrate the model.